Pressure Sensor

Installation Guide

VEEDER-ROOT

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DAMAGE CLAIMS / LOST EQUIPMENT

Thoroughly examine all components and units as soon as they are received. If any cartons are damaged or missing, write a complete and detailed description of the damage or shortage on the face of the freight bill. The carrier's agent must verify the inspection and sign the description. Refuse only the damaged product, not the entire shipment.

VEEDER-ROOT'S PREFERRED CARRIER

1. Contact VR Customer Service at 800-873-3313 with the specific part numbers and quantities that were missing or received damaged.

2.   Fax signed Bill of Lading (BOL) to VR Customer Service at 800-234-5350.

3. VR will file the claim with the carrier and replace the damaged/missing product at no charge to the customer. Customer Service will work with production facility to have the replacement product shipped as soon as possible.

CUSTOMER'S PREFERRED CARRIER

1. It is the customer's responsibility to file a claim with their carrier.

2. Customer may submit a replacement purchase order. Customer is responsible for all charges and freight associated with replacement order. Customer Service will work with production facility to have the replacement product shipped as soon as possible.

3. If "lost" equipment is delivered at a later date and is not needed, VR will allow a Return to Stock without a restocking fee.

4. VR will NOT be responsible for any compensation when a customer chooses their own carrier.

RETURN SHIPPING

For the parts return procedure, please follow the appropriate instructions in the "General Returned Goods Policy" and "Parts Return" pages in the "Policies and Literature" section of the Veeder-Root **North American Environmental Products** price list.

Pressure Sensor Installation

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Pressure Sensor Installation

This manual contains instructions to install a Veeder-Root (In-Station Diagnostic) Pressure Sensor in a dispenser's vapor return line.

This manual assumes all preliminary site preparation is completed, and that wiring from the console to the Pressure Sensor junction box is in place and meets the requirements set out in the console's Site Prep manual.

Contractor Certification Requirements

Veeder-Root requires the following minimum training certifications for contractors who will install and setup the equipment discussed in this manual:

Level 1 Contractors holding valid Level 1 Certification are approved to perform wiring and conduit routing, equipment mounting, probe and sensor installation, tank and line preparation, and line leak detector installation.

Level 2/3 or 4 Contractors holding valid Level 2, 3, or 4 Certifications are approved to perform installation checkout, startup, programming and operations training, troubleshooting and servicing for all Veeder-Root Tank Monitoring Systems, including Line Leak Detection and associated accessories.

Warranty Registrations may only be submitted by selected Distributors.

Related Manuals

576013-879   TLS-3XX Series Consoles Site Prep and Installation Manual

577013-800   In-Station Diagnostics (ISD) Install, Setup, & Operation Manual

Safety Precautions

The following safety symbols may be used throughout this manual to alert you to important safety hazards and precautions.

	EXPLOSIVE Fuels and their vapors are extremely explosive if ignited.		**FLAMMABLE** Fuels and their vapors are extremely flammable.
	ELECTRICITY High voltage exists in, and is supplied to, the device. A potential shock hazard exists.		**TURN POWER OFF** Live power to a device creates a potential shock hazard. Turn Off power to the device and associated accessories when servicing the unit.
	READ ALL RELATED MANUALS Knowledge of all related procedures before you begin work is important. Read and understand all manuals thoroughly. If you do not understand a procedure, ask someone who does.		**USE SAFETY BARRICADES** Unauthorized people or vehicles in the work area are dangerous. Always use safety cones or barricades, safety tape, and your vehicle to block the work area.

⚠ WARNING

This product is to be installed and operated in the highly combustible environment of a gasoline dispenser where flammable liquids and explosive vapors may be present.

Improper installation may result in fire or explosion causing serious injury or death.

The following hazards exist:

1. **Electrical shock resulting in serious injury or death may result if power is on during installation and the device is improperly installed.**

2. **Product leakage could cause severe environmental damage or explosion resulting in death, serious personal injury, property loss and equipment damage.**

Observe the following precautions:

1. **Read and follow all instructions in this manual, including all safety warnings.**

2. **To be installed in accordance with the National Electrical Code, NFPA 70 and the Automotive And Marine Service Station Code, NFPA 30A.**

3. **Before installing this device, turn Off, tag/lock out power to the system, including console and submersible pumps.**

4. **To protect yourself and others from being struck by vehicles, block off your work area during installation or service.**

5. **Substitution of components may impair intrinsic safety.**

Before You Begin

• A level 1 or higher certified Veeder-Root Technician must be on site to assist in this type of installation.

• Comply with all recommended safety practices identified by OSHA (Occupational Safety and Health Administration) and your employer.

• Review and comply with all the safety warnings in the installation manuals and any other national, State or Local requirements.

• A 2-conductor, 18 AWG shielded cable must be installed in intrinsically safe conduit from the dispenser to the TLS console.

• The Pressure Sensor must be installed in a VERTICAL position with the sensing port pointing down, and its connection to the vapor return line must be made BELOW the vapor return line shear valve in the base of the dispenser.

• For all connections requiring sealant, use only yellow Gas/TFE teflon tape.

Veeder-Root Parts

Veeder-Root parts and kits required to install the Pressure Sensor are listed in Table 1.

Table 1.- Sensor Installation Kit (P/N 330020-433)

Item	Qty.	Description	P/N
1	1	Pressure sensor	331946-001
2	4	Male connector 68CA-4-4, brass 1/4" tube to 1/4" pipe	514100-430
3	1	Union 62CA-4, brass 1/4" tube size	514100-431
4	1	Plug 59CA-4, brass 1/4" tube size	514100-432
5	1	Universal sensor mounting kit - miscellaneous assortment of U-bolts, brackets, clamps, and fasteners	330020-012
6	2	Wire nut	576008-461
7	1	Sealing pack	514100-304
8	1	Cord grip	331028-011
9	2	Tie wrap	510901-337
10	1	Shim	332061-001
11	1	Ball Valve, 3-way, 1/4"	576008-649
12	1	Copper tube, soft, 1/4" OD, 36" length	332151-001

Tools Required

1. Wrenches suitable for tightening tubing fittings.

2. Necessary pipe fitter's equipment and a non-hazardous work space suitable to modify the dispenser vapor line for Pressure Sensor installation.

Installation Steps

1. Before installing this device, turn Off, tag/lock out power to the system, including console and submersible pumps.

2. Determine which dispenser is closest to the tank being monitored. Remove that dispenser's lower sheet metal doors to gain access to the vapor plumbing.

3. Locate a suitable port or plumb a suitable "T" fitting in one of the locations listed below (listed in order of preference):

   a. The main vapor return line (see Figure 1) - this is the preferred position,

   b. In the vapor return line between shear valve and main vapor return line, or

   c. If a vapor flow meter is installed in the shear valve housing below the shear valve mechanism. Note: 1 to 2 ports are typically available on a shear valve. If you have to use one of these ports, make certain it accesses the plumbing below the valve mechanism.

4. Install one of the 68CA-4-4 male connectors (item 2 in Table 1) from the kit into the tapped hole.

5. Install Pressure Sensor (item 1 in Table 1) vertically to the dispenser frame or piping using the 2-inch conduit clamp, rubber shim, and necessary bolts, nuts, and washers from the included Universal Sensor Mounting kit. Wrap the rubber shim (item 10 in Table 1) around the sensor before inserting it into the clamp. Also make sure the sensor cable outlet is facing up and the pressure sensing port tube in the base of the sensor is facing down.

6. Attach one end of the 62CA-4 union (item 3 in Table 1) to the pressure sensing port in the base of the Pressure Sensor.

7. Install the remaining 68CA-4-4 male connectors (item 2 in Table 1) from the kit into each of the three ports in the 3-way calibration valve (item 13 in Table 1).

8. Measure, fabricate, and install a ¼" OD copper tube (item 12 in Table 1) that runs between the 62CA-4 union in the base of the sensor and the center port of the 3-way calibration valve.

9. Measure, fabricate, and install a ¼" OD copper tube that runs between the ¼" tube end of the male connector fitting installed beneath the shear valve and one of the two unused ports on the 3-way valve, being careful not to create any potential liquid traps.

10. Screw the 59CA-4 plug, item 4, from the kit onto the last port's male connector. Make sure the valve's handle is set to connect the sensor to the vapor return line and not to the capped (ambient) port.

    Important! All plumbing's pitch to drain should be 1/4" vertical per 12" horizontal to eliminate liquid traps.

11. Route the cable from Pressure Sensor to the Pressure Sensor junction box in the dispenser. Observing polarity, connect the sensor wiring to the field wiring from console and cap with wire nuts (see Figure 2).
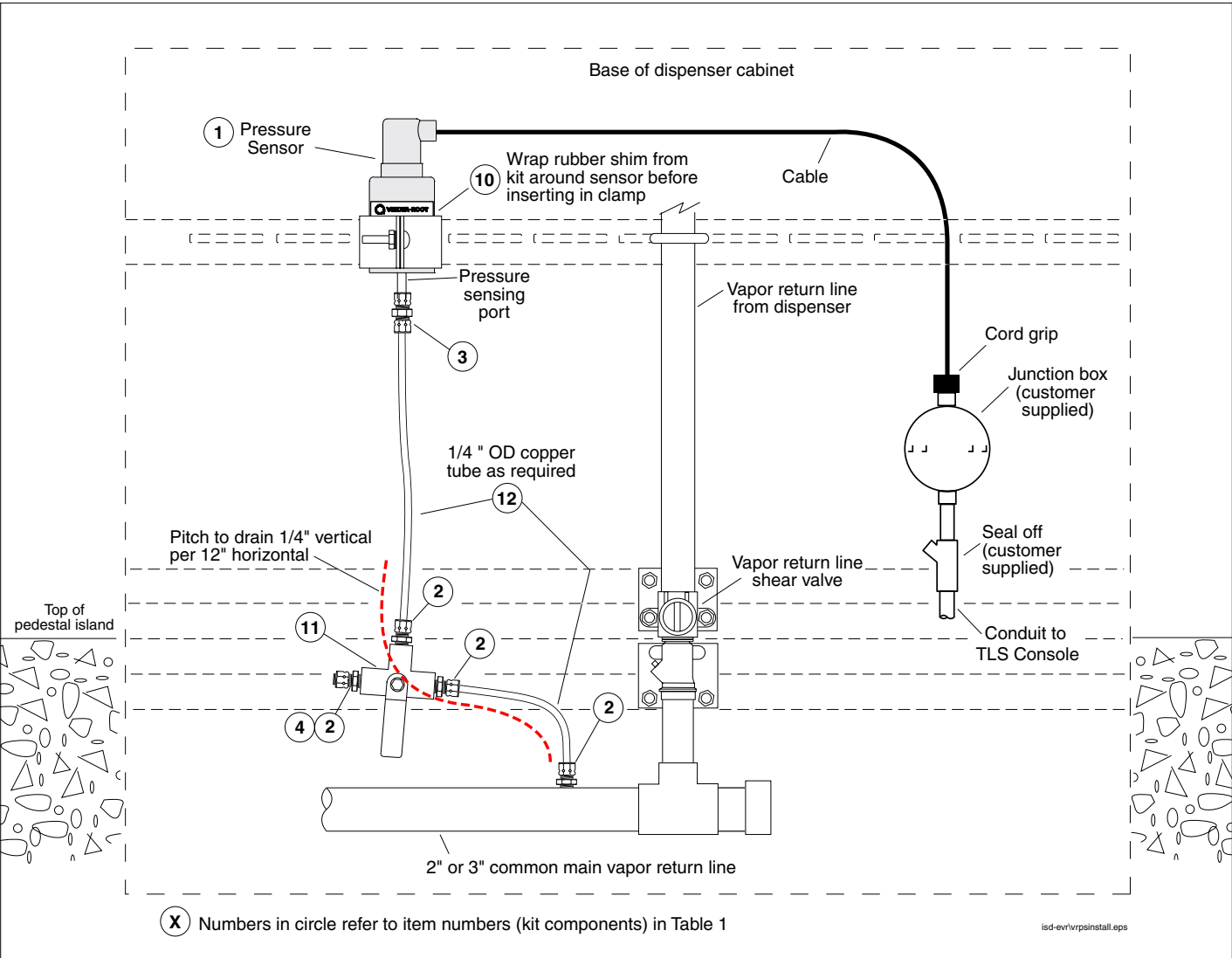
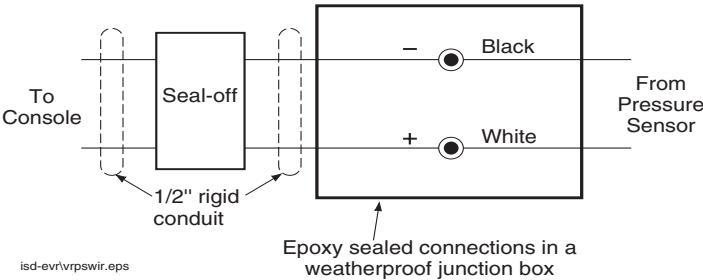**Figure 1.   Example Pressure Sensor Installation**

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Figure 2.   Field wiring Pressure Sensor - Observe Polarity

12. Seal wire nuts in epoxy sealant following the instructions in Figure 3.

A

B

C From probe, sensor, or transducer

To console

Make sure that the ends of cable sheathing are sub-merged in sealant

Tie wrap

Wire nuts

Instructions:

NOTE: When temperature is below 50˚F (10˚C), keep resin in a warm place prior to mixing (e.g., in an inside pocket next to body).

1. Open epoxy sealant package, and remove resin pak.
2. Holding resin pak as shown in A, bend pak along long length.
3. As shown in B, firmly squeeze the RED SIDE of the resin, forcing it through the center seal and into BLACK SIDE.

4. Mix thoroughly to a uniform color by squeezing contents back and forth 25-30 times.
5. Squeeze mixed, warm resin into one end of bag and cutoff other end.
6. Slowly insert wiring connections into sealing pack until they fit snugly against the opposite end as shown in C.
7. Twist open end of bag and use tie wrap to close it off and position the tie wrapped end up until the resin jells.

CAUTION: Epoxy sealant is irritating to eyes, respiratory system, and skin. Can cause allergic skin reaction. Contains: epoxy resin and Cycloaliphatic epoxycarboxylate.

Precautions: Wear suitable protective clothing, gloves, eye, and face protection. Use only in well ventilated areas. Wash thoroughly before eating, drinking, or smoking.
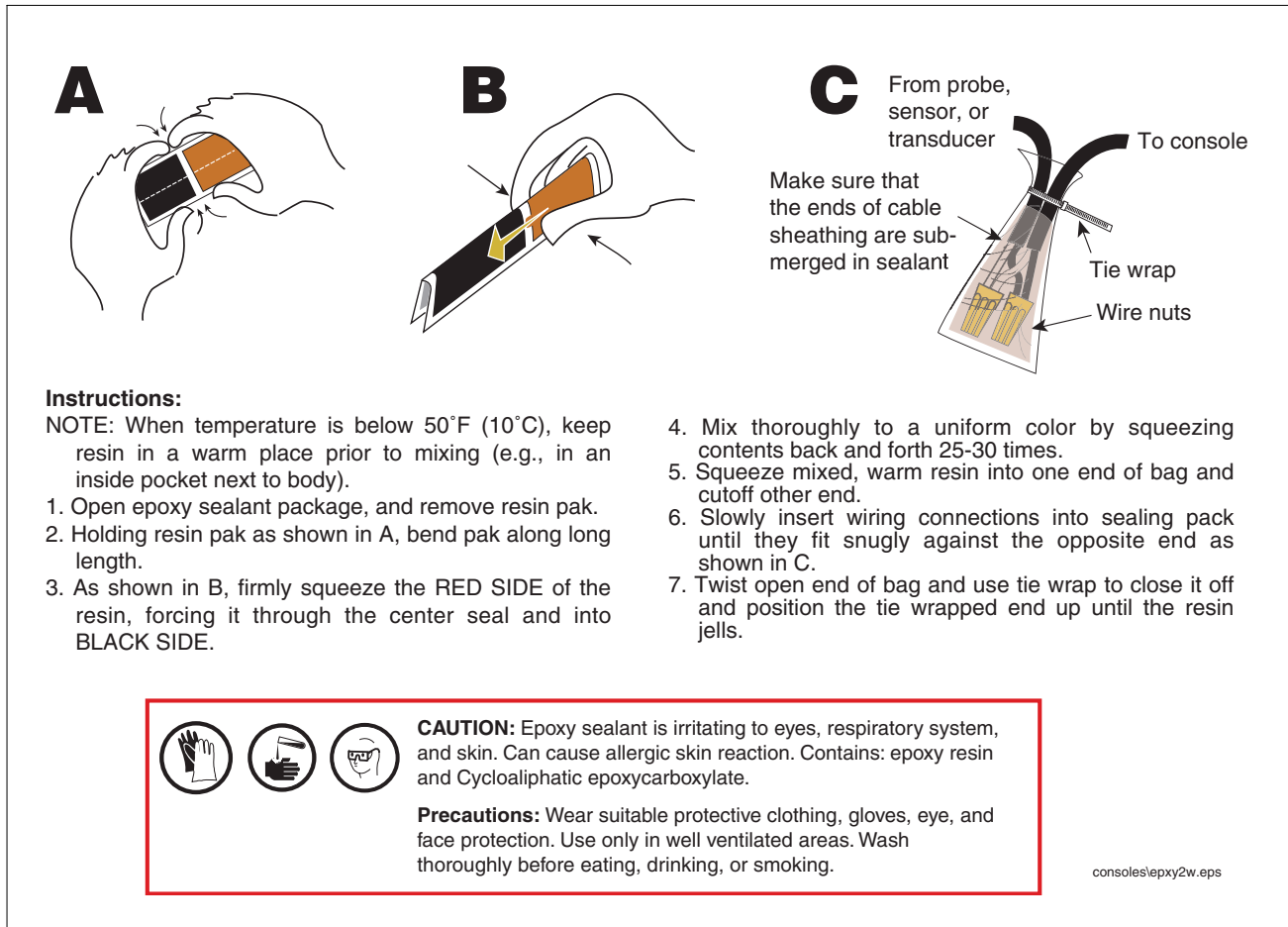
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Figure 3.   Epoxy sealing field wiring

13. Push the epoxy sealed bag into the junction box. Replace and tighten the junction box cover.

14. Terminate field wiring into TLS Console and connect to Smart Sensor Module (TLS-3XX - Figure 4). Note: observe polarity! The cable length between the console and sensor must not exceed the distance stated in the TLS-3XX Site Prep manual (P/N 576013-879).

    Note: Intrinsically safe devices must be installed in accordance with Article 504 of the National Electrical Code, ANSI/NFPA 70, for installation in the United States, or Section 18 of the Canadian Electrical Code for installations in Canada.

    This intrinsically safe Pressure Sensor P/N 331946-001, has only been evaluated for connection to a UL listed TLS-3XX Liquid Level Gauge / Leak Detector.

    Conductors of different intrinsically safe circuits run in the same cable/conduit must have at least 0.01 inch (0.25 mm) of insulation.

15. After the Pressure Sensor is installed, pressurize the tank ullage space and vapor piping to at least 2 inches WC and test for leaks using leak detection solution.

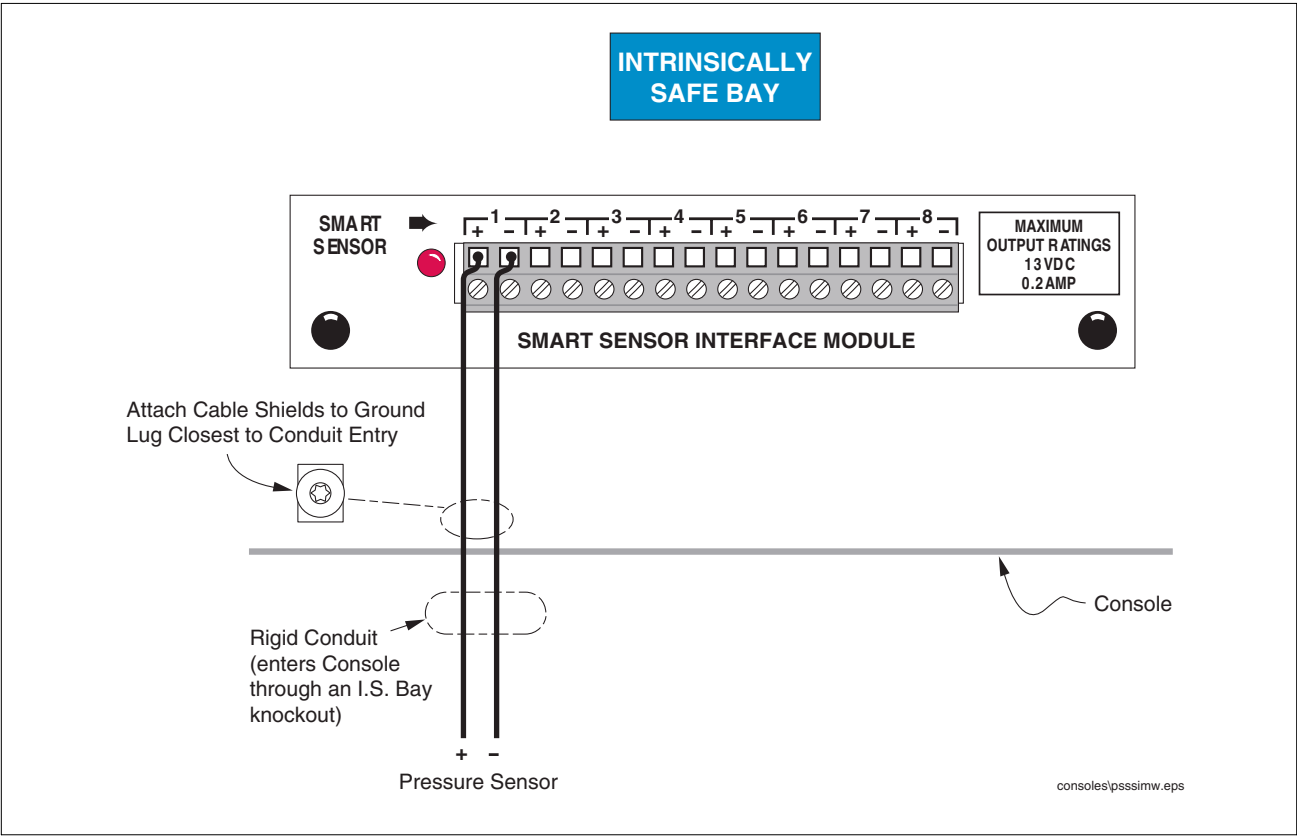16. Replace lower dispenser sheet metal doors onto dispensers.

Figure 4. Connecting Pressure Sensor to TLS-3XX Smart Sensor Interface Module

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